

CLAIMS

1. A biaxially oriented thermoplastic resin film comprising a thermoplastic resin containing transition metal oxide particles, wherein the melting point of the biaxially oriented thermoplastic resin film is higher than the melting point of the thermoplastic resin to be used.

2. A biaxially oriented thermoplastic resin film comprising a thermoplastic resin containing transition metal oxide particles, wherein the difference between a peak temperature (melting point  $T_1$ ) of the heat of fusion in the first run of the measurement of the biaxially oriented thermoplastic resin film with a differential scanning calorimeter (DSC) and a peak temperature (melting point  $T_2$ ) of the heat of fusion in the second run satisfies the following Formula (1).

$$2^{\circ}\text{C} \leq T_1 - T_2 \leq 30^{\circ}\text{C} \quad (1)$$

3. A biaxially oriented thermoplastic resin film comprising a thermoplastic resin containing transition metal oxide particles, wherein the melting point of the biaxially oriented thermoplastic resin film is higher than the melting point of the thermoplastic resin to be used, and the difference between a peak temperature (melting point  $T_1$ ) of

the heat of fusion in the first run of the measurement of the biaxially oriented thermoplastic resin film with a differential scanning calorimeter (DSC) and a peak temperature (melting point  $T_2$ ) of the heat of fusion in the second run satisfies the following Formula (1).

$$2^{\circ}\text{C} \leq T_1 - T_2 \leq 30^{\circ}\text{C} \quad (1)$$

4. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 3, wherein the thermoplastic resin is a resin primarily containing at least one selected from the group consisting of a polyester, a polyphenylene sulfide, a polyolefin, a polyamide, a polyimide, a polycarbonate, and a polyetheretherketone.

5. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 4, wherein the thermoplastic resin is a resin primarily containing a polyester.

6. A biaxially oriented thermoplastic resin film comprising a polyester containing transition metal oxide particles, wherein the plane orientation factor is 0.120 or more and less than 0.280.

7. The biaxially oriented thermoplastic resin film

according to any one of Claims 1 to 6, wherein an average primary particle diameter of the transition metal oxide particles is 3 to 120 nm.

8. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 7, wherein an average secondary particle diameter of the transition metal oxide particles is 3 to 250 nm.

9. The biaxially oriented thermoplastic resin film according to any one of Claims 6 to 8, comprising a polyester which primarily contains ethylene naphthalate and further contains transition metal oxide particles, wherein the plane orientation factor is 0.210 or more and less than 0.280.

10. The biaxially oriented thermoplastic resin film according to any one of Claims 6 to 8, comprising a polyester which primarily contains ethylene terephthalate and further contains transition metal oxide particles, wherein the plane orientation factor is 0.165 to 0.200.

11. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 10, wherein the content of the transition metal oxide particles is 0.01 to 5 percent

by weight.

12. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 11, wherein a primary component constituting the transition metal oxide particle is copper oxide.

13. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 12, wherein the void area percentage in the film is 0 percent or more and 5 percent or less.

14. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 13, wherein the total of the Young's modulus in a machine direction and that in the transverse direction of the film is 9 GPa or more and 35 GPa or less.

15. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 14, wherein the thickness of the film is 0.5  $\mu\text{m}$  or more and 300  $\mu\text{m}$  or less.

16. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 15, wherein the number of coarse aggregates of at least 3  $\mu\text{m}$  is 30 per 100  $\text{cm}^2$  or

less.

17. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 16, wherein the storage modulus of the film in the dynamic viscoelasticity measurement at 200°C is 0.4 GPa or more and less than 1.5 GPa.

18. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 17, wherein the heat shrinkage of the film at 100°C is 0 percent or more and less than 1.0 percent.

19. The biaxially oriented thermoplastic resin film according to any one of Claims 1 to 18, wherein the heat shrinkage of the film at 150°C is 0 percent or more and less than 1.5 percent.

20. A magnetic recording medium comprising the biaxially oriented thermoplastic resin film according to any one of Claims 1 to 19.

21. A circuit material comprising the biaxially oriented thermoplastic resin film according to any one of Claims 1 to 19.

22. A capacitor comprising the biaxially oriented thermoplastic resin film according to any one of Claims 1 to 19.

23. A thermal transfer ribbon comprising the biaxially oriented thermoplastic resin film according to any one of Claims 1 to 19.

24. A card comprising the biaxially oriented thermoplastic resin film according to any one of Claims 1 to 19.